

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Currently Amended)** A method of automatically identifying a pattern on a page, comprising:

synthetically generating textual patterns as signal templates;

generating a compensated image, compensating, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated ~~images~~patterns; and

comparing compensated images against images in a database; and

identifying a pattern on a page based upon the comparison;

wherein compensating an image includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image,
moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.

2. (Original) The method of claim 1, comprising outputting a signal against a synthetically generated image.

3. (Original) The method of claim 1, wherein said compensating step accommodates for visual differences between font typefaces and different font sizes.
4. (Original) The method of claim 1, further comprising deleting a duplicate scanned first page.
5. (Original) The method of claim 1, further comprising identifying pages as duplicates and assessing the duplicates for quality and deleting lower quality page of the duplicates.
6. (Original) The method of claim 5, comprising performing a connected element analysis to identify speckle and blocks of solid color.
7. **(Canceled).**
8. (Original) The method of claim 7, comprising moving the page image from the spatial domain to a frequency domain.
9. (Original) The method of claim 8, comprising reducing resolution, inverting and mirroring image.
10. (Original) The method of claim 1, comprising producing a similarity matrix for search pattern locations identified in said comparing step.
11. (Original) The method of claim 1, wherein said compensating step can accommodate visual differences between different typefaces, different font sizes and distortions introduced in subsequent printing, handling and/or scanning of the page.
12. (Original) The method of claim 1, wherein said compensating step can accommodate visual differences occurring from producing a graphic image.

13. (Original) The method of claim 1, comprising creating a database of metadata to use in synthetically generating patterns.

14. (Original) The method of claim 1, comprising creating a target to search for using a search word specified using numeric characters in the search word.

15. (Original) The method of claim 14, wherein compensations include small enlargements or reductions in search pattern size or visual distortions.

16. **(Currently Amended)** A computer readable medium, comprising:

a first sequence of instructions which, when executed by said processor, causes said processor to:

synthetically generate textual patterns as signal templates;

a second sequence of instructions which when executed by said processor, causes said processor to compensate, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated images; and

a third set of instructions, which when executed by said processor, causes said processor to compare compensated images against images in a database;

wherein compensating includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image, moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.

17. **(Currently Amended)** An optical apparatus, configured to automatically identify a pattern on a page, comprising:

a generating unit for synthetically generating textual patterns as signal templates;

a compensating unit for compensating, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated images; and

a comparing unit for comparing compensated images against images in a database;

wherein compensating includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image,

moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.

18. **(Currently Amended)** A computer-readable medium configured to automatically identify a pattern on a page, having stored thereon a plurality of sequences of instructions, said plurality of sequences of instructions which, when executed by a processor, cause said processor to perform the steps of:

synthetically generating textual patterns as signal templates;

compensating, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated

images; and

comparing compensated images against images in a database;

wherein compensating includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image, moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.

19. **(Currently Amended)** A computer system for automatically identifying a pattern on a page, said computer system comprising a processor and a memory coupled to said processor; the memory having stored therein sequences of instructions, which, when executed by said processor to perform the steps of:

synthetically generating textual patterns as signal templates;

compensating, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated images; and

comparing compensated images against images in a database;

wherein compensating includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image, moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.

20. (Canceled).

21. (Currently Amended) A method of automatically identifying a pattern on a page, comprising:

synthetically generating textual patterns as signal templates;

generating a compensated image, compensating, if necessary, for visual differences between the synthetically generated textual patterns and images being compared against the synthetically generated images; and

comparing compensated images against images in a database;

wherein said compensating includes reducing resolution, ~~inserting-inverting and mirroring~~ a page image in the database;

wherein compensating includes reducing resolution, inverting and mirroring a page image in the database; and

wherein comparing compensated images against images in a database includes:

performing a Fast Fourier Transform (FFT) on the compensated image, moving the compensated image from the spatial to frequency domain;

performing an FFT on a search target image;

multiplying the FFT of the image to be searched by the FFT of the search target image to produce a correlation plane;

performing an inverse FFT of the correlation plane, converting the correlation plane from the frequency domain to a spatial specification to produce a similarity matrix for search pattern locations within the target image; and

applying a threshold to the similarity matrix to extract location of matches above the threshold.